18^{th} Workshop on

SUSTAINABLE HORTICULTURAL PRODUCTION IN THE TROPICS

Special Topic

"Strengthening Theoretical Research Methods - Systems Analysis"

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PROGRAM AND ABSTRACTS

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64. Evaluating the interaction of greenhouse whitefly with chemical ecology of tomato and companion plants

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Abstract

The greenhouse whitefly, *Trialeurodes vaporariorum* (Westwood) (Hemiptera: Aleyrodidae) is a globally known vegetable and ornamental greenhouse pest. The pest feed directly by extracting phloem sap or indirectly by transmitting Tomato Infectious Chlorotic Virus (TICV) leading to losses of between 5-30% on the fresh market produced tomatoes in sub-Saharan Africa. Previous studies have proven that semiochemicals can deter insect's pests such as whiteflies. The aim of this study was to find push and pull volatiles from greenhouse whitefly infested tomato and Mexican marigold / sweet basil plants respectively for the management of greenhouse whitefly. Behavioral assays were carried out using Y-tube olfactometry and volatile chemical analyses carried out using GC-MS to investigate plant-whitefly interactions using four tomato cultivars and two herbal plants. Results showed that the greenhouse whitefly was significantly repelled by herbivore-induced volatiles. About 19 major compounds were identified from tomato. Three compounds vis p-cymene, linalool and limonene elicited avoidance behavior in the greenhouse whitefly while one compound, 2-hexanal was attractive to the insects at 1% concentration. In addition, the insects preferred flowering sweet basil and Mexican marigold when compared to the red beauty F1 tomato cultivar. These findings suggest that semiochemicals play a significant role in the greenhouse whitefly-plant interactions. The VOC's in tomato eliciting avoidance and those eliciting attraction from sweet basil and Mexican marigold can hence be explored as alternative biocontrol for greenhouse whitefly.

Key words: *Trialeurodes vaporariorum*, VOC's, sweet basil and Mexican marigold

65. Postharvest UV-C treatment reduces ethylene effect and preserves nutritional quality of vegetable amaranth

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Abstract

Vegetable amaranth, *Amaranthus cruentus* L. is an important traditional vegetable crop, rich in various micro- and macro-nutrients, proteins, dietary fiber, as well as health promoting anti-oxidative compounds. During transportation or in the market they are mixed together with